No. 8000022

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

South Dakota Agricultural Experiment Station
South Dakota State University

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF seventeen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS REQUIRED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'James'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington *this* 24th *day of* April *in the year of our Lord one thousand nine hundred and* eighty.

Attest:

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Secretary of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

FORM APPROVED
OMB NO. 40-R3822

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY	1b. VARIETY NAME	FOR OFFICIAL USE ONLY
SD 2273	James CI 17791	PV NUMBER 8000022
2. KIND NAME	3. GENUS AND SPECIES NAME	FILING DATE: 12-18-79 — TIME: 12:00 (A.M.) P.M.
Wheat, Common	Triticum aestivum	FEE RECEIVED: $ 500.00 + $ 250.00 — DATE: 12-18-79 / 3/24/80
4. FAMILY NAME (BOTANICAL)	5. DATE OF DETERMINATION Date of increase decision 2/23/78 Date of release 3/1/79	
Gramineae		
6. NAME OF APPLICANT(S) South Dakota Agricultural Experiment Station South Dakota State Univ.	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)* Brookings, SD 57007	8. TELEPHONE AREA CODE AND NUMBER (605) 688-5121

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*	10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION	11. DATE OF INCORPORATION
Agricultural Experiment Station	N/A	N/A

12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:

Dr. Raymond A. Moore, Director
South Dakota Agric. Exp. Station
SDSU, Brookings, SD 57007

Dr. Don L. Keim, Spring Wheat Breeder
Department of Plant Science
SDSU, Brookings, SD 57007

13. **CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:**

- [X] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [X] 13B. Exhibit B, Novelty Statement.
- [X] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*
- [X] 13D. Exhibit D, Additional Description of the Variety.

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [X] YES [ ] NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?	14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED?
[X] YES [ ] NO	[ ] FOUNDATION [ ] REGISTERED [ ] CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? [X] YES [ ] NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

10-24-79
(DATE)

R A Moore
(SIGNATURE OF APPLICANT)

10/24/79
(DATE)

Don L Keim
(SIGNATURE OF APPLICANT)

Rec'd 11-27-79

INSTRUCTIONS

GENERAL: Send an original copy of the application and exhibits, at least 2,500 viable seeds, and $500 fee ($250 filing fee and $250 examination fee) to U.S. Dept. of Agriculture, Agricultural Marketing Service, Livestock, Poultry, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (See section 180.175 of the Regulations and Rules of Practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

5 Give the date the applicant determined that he had a new variety based on (1) the definition in section 41(a) of the Act and (2) the date a decision was made to increase the seed.

13a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.

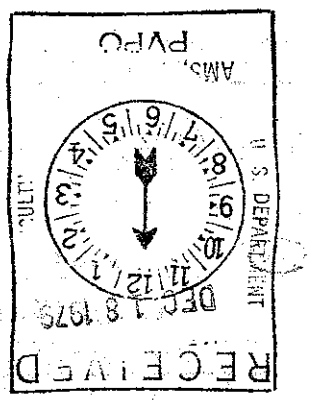
13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.

13c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.

13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as, plant habit, plant color, disease resistance, etc.

14a If "YES" is specified (seed of this variety be sold by variety name only as a class of certified seed) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "NO," he may change his choice. (See section 180.16 of the Regulations and Rules of Practice.)

15a See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.



13A. Origin and Breeding History of the Variety

1. 'James' is an F_5-derived head selection from the cross OLAF/ND510 (Table 1). This cross was made by plant breeders at North Dakota State University, Fargo, ND. Unselected F_2 seed was given to the breeder at South Dakota State University in 1972.

2. Breeders seed was increased at Yuma, AZ in 1975, at Moody County, SD in 1976, and at Brookings County, SD in 1977.

3. Offtypes of the following description were found in a foundation seed increase field in 1978.

Height	Awn Type	Ratio (offtype:normal)
4 to 6 inches > normal	awned	6.4:10000
3 to 4 inches > normal	awnless	2.4:10000
= normal	awnless	6.4:10000

Offtypes of the same frequency were observed in a foundation seed increase field in 1979. However, the taller offtypes were more exaggerated being 6 to 8 inches and 8 to 12 inches taller than normal for the awned and awnless offtypes, respectively.

4. Other than the variants described in (3) above, the variety has been uniform and stable for all morphological characters during the six generations of selfing and increase.

13B. Novelty Statement

James is primarily distinguished from other awned hard red spring wheat cultivars by its earliness of heading (average, 58 days from planting) and its midtall plant height (77 cm) (see Table 2). All older awned hard red spring wheat cultivars not listed in Table 2 can be distinguished from James in that they are susceptible to race 15B (TNM) of stem rust.

Of early heading cultivars James most closely resembles the cultivar 'Butte' (Table 2). Quantitative characters distinguishing James from Butte are primarily grain test weight (weight/volume), leaf width and head width (Table 3). Butte has significantly higher test weight than James. Head and leaf length differences are not significant but head and leaf widths are significantly larger for James.

James and Butte also have distinct differences in their reaction to race TNMH of stem rust. Butte has a ';' reaction type and James has a '2' reaction type based on results from the 1976 Uniform Regional Spring Wheat Yield Nursery.

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Table 1. Breeding History of 'James' Hard Red Spring Wheat
Pedigree: Olaf/ND510
Selection: SD 2273

Generation	Year	Location	Plant	Harvest	Nursery
F_0-F_1-F_2	1970-71	North Dakota	Cross Made, F_1, F_2	Bulked	ND-GH-57
F_3	1972	Brookings	Head Rows	Head Seln.	2007 16018
F_4	1972-73	Greenhouse	Head Hill	Head Seln.	2912 159
F_5	1973	Brookings	Head Rows	Bulked	3119 9043-56
F_6	1973-74	Mexico Greenhouse	Head Rows Rust Screen	Bulked	SDSU 4113
F_7	1974	Moody Co., Redfield	Yield Trial	Bulked	
F_8	1975	9 Locations, South Dakota Brookings	Yield Trial Rust Nursery	Bulked	
F_9	1975-76	Yuma, Arizona	Breeder Seed Increase	Bulked	
F_{10}	1976	Moody Co.	Breeder Seed Increase	Bulked	
F_{11}	1977	Brookings	Breeder Seed Increase	Bulked	
F_{12}	1978	Brookings	Foundation Seed Inc.	Bulked	

Table 2. Description of varietal differences in awned hard red spring wheat cultivars. 8000022

Cultivar	Major Character Differences from James		
	Head Date	Plant Height	Other
	--days + James--	--cm + James--	
Angus[1]	4+	6-	bronze chaff (James, white)
Bonanza[2]		15-	
Bounty 208[2]		15-	very susc. to Pseudomonas
Bounty 309[3]	2+	10-	field stem rust (Bty 309 60MS/James 0)
Butte[1] (See Table 3)	0	2+	
Coteau[1]	5+	6+	
Era[1]	6+	8-	stem rust (TMNH Era ;/James 2)
Fletcher[4]	1 > Era	= Era	
Justin[1]	6+	13+	stem rust (QSHS Justin S/James 21;,;)
Kitt[5]	3+	12-	
Len[1]	4+	3-	
Norana[6]	1 < Era	1 > Era	
Olaf[3]	5+	3-	
Polk[7]			bronze chaff
Prodax[3]	5+	5-	
Profit 75[2]		10-	
Protor[2]		11-	
Solar[3]	5+	10-	
W-444[2]		16-	
Wared[8]	= Era	= Era	bronze chaff
W.S. 25[2]		9-	

1/ Uniform Regional Spring Wheat Yield Nursery, 1976
2/ Standard Variety Spring Wheat Trials, 1976-1979
3/ Advanced Yield Trials, 1978
4/ U. of Minn. Variety Trials, 1972-1974
5/ Advanced Yield Trials, 1977
6/ Uniform Regional Spring Wheat Yield Nursery, 1972
7/ Crop Sci. 11:604
8/ Crop Sci. 14:910

Table 3. Comparative differences between James and Butte.

Character/test	No. Tests	James	Butte	Difference	Probability[1/]
Height, cm					
- Uniform Regional Trials 1976	16	75.6	78.1	-2.4	< 0.1
- Advanced Yield Trails, 1977-1979	22	79.4	82.7	-3.3	< 0.05
- Stand. Variety Trials, 1976-1979	24	78.4	79.5	-1.2	N/S
Test Weight, lb/bu					
- Uniform Regional Trials, 1976	19	60.1	61.7	-1.6	< 0.001
- Advanced Yield Trials, 1977-1978	17	59.4	61.1	-1.7	< 0.001
- Standard Variety SW Trials, 1976-1978	23	57.2	59.1	-2.0	< 0.001
Individual Plant Comparisons[2/]					
- Leaf length, cm	20	22.9	22.5	0.4	N/S
- Head length, cm	20	8.2	8.2	0.04	N/S
- Leaf width, mm	20	10.6	9.6	1.0	< 0.01
- Head width, mm	20	7.7	7.0	0.7	< 0.05

1/ Probability indicating significance based on paired t-tests.

2/ Plants sampled from Advanced Yield Trial, Brookings, 1979.

Table 4. Seedling and adult plant stem rust reaction in 1976 Uniform Regional HRS Wheat Nursery.

Entry	Race								
	151		113			15B-2		17	
	QSHS	QFBS	RTQQ	RKQS	RHRS	TNMH	TLMH	HSCS	HNLQ
ERA	23	;	;	;	;	;	;	0	0
BUTTE	2	;	2-	2-	2-	;	;	;	;
SD 2271	21	;	22+	21	;	2	2	;1	;1-
ANGUS	X-	;	;	;1C	;	;	;	;	;
SD 2273	21;,;	2-;	2=;	;1-,2-	;	2	2-,;	;1=	;
WALDRON	2-	2-;1-	2-	2-	;1=	2-	2-	2-,0	2-,0
COTEAU	23	;	2=	;1-	;	;	;	0	;
CHRIS	2±1	2±1	2±1	2±1	;	X-	;1-	0	0

Entry	Percent Severity and Reaction					Coeff. of Infection
	LANGDON	CARRINGTON	OAKES	MINOT	FARGO	
ERA	0	0	0	tR	tMR-tMS	0.3
BUTTE	0	0	0	0-5R	10R-10MR	0.4
SD 2271	0	5MR	0	15MR-5MS	tR,10MR,10S	1.7
ANGUS	0	0	0	0	0	0.0
SD 2273	tR	tR	0	tR	tR	0.4
WALDRON	5-5MR,tMS	10MR	10MR,tS	15MR-15R,20MS	15R-5MR,25S	3.6
COTEAU	0	0	0	0	tR	0.1
CHRIS	0-tS	0-tS	0,tS	5MS-tS	tS	1.3

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-6
(2-15-73)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY

WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S): South Dakota Agricultural Experiment Station, South Dakota State University

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*: Brookings, SD 57007

FOR OFFICIAL USE ONLY

PVPO NUMBER: 8000022

VARIETY NAME OR TEMPORARY DESIGNATION: JAMES B 12/27/79

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

[1] 1 = SPRING 2 = WINTER 3 = OTHER *(Specify)* _____

[2] 1 = SOFT 2 = HARD 3 = OTHER *(Specify)* _____

[2] 1 = WHITE 2 = RED 3 = OTHER *(Specify)* _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

[0][6][0] FIRST FLOWERING

[0][6][5] LAST FLOWERING

4. MATURITY *(50% Flowering)*:

[0][4] NO. OF DAYS *EARLIER* THAN .....

[3] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

[ ][ ] NO. OF DAYS *LATER* THAN .....

[ ]

5. PLANT HEIGHT *(From soil level to top of head)*:

[0][7][7] CM. HIGH

[ ][ ] CM. TALLER THAN .....

[ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

[1][1] CM. SHORTER THAN .....

[3]

6. PLANT COLOR AT BOOTING *(See reverse)*:

[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

8. STEM:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom: 1 = ABSENT 2 = PRESENT

[2] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[0][3] NO. OF NODES *(Originating from node above ground)*

[1][9] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER *(Specify)*: _____

[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[1][1] MM. LEAF WIDTH *(First leaf below flag leaf)*

[2][3] CM. LEAF LENGTH *(First leaf below flag leaf)*:

FORM GR-470-6 (REVERSE)

11. HEAD:

[1] Density: 1 = LAX 2 = DENSE

[1] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) _____

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[2] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[0][8] CM. LENGTH

[0][8] MM. WIDTH

12. GLUMES AT MATURITY:

[2] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[1] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[3] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

Rentken 1/17/80

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[2] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

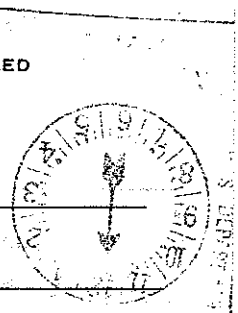
[ ] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[0][6] MM. LENGTH

[0][3] MM. WIDTH

[3][3] GM. PER 1000 SEEDS



17. SEED CREASE:

[2] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[2] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[2] STEM RUST (Races) TNM QSH QFB RTQ RKQ RHM

[2] LEAF RUST (Races) Mod. Resistant Field reaction

[0] STRIPE RUST (Races) _____

[0] LOOSE SMUT

[0] POWDERY MILDEW HJC HNL

[0] BUNT

[0] OTHER (Specify) _____

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SAWFLY

[0] APHID (Bydv.)

[0] GREEN BUG

[0] CEREAL LEAF BEETLE

[0] OTHER (Specify) _____

HESSIAN FLY RACES: [1] GP [0] A [0] B [0] C [0] D [0] E [0] F [0] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Butte	Seed size	Butte
Leaf size	Butte	Seed shape	Butte
Leaf color	Butte	Coleoptile elongation	Eureka
Leaf carriage	Unknown	Seedling pigmentation	Eureka

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. *(See attachment.)*

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

13D. Additional Description of James

'James' is a cultivar of Triticum aestivium L. with spring growth habit.

The kernels are free-threshing, red, hard, mid-long, and ovate. Kernel size is about 6 mm long and about 3 mm wide. The germ is midsized. The checks are angular with a midwide and middeep crease. The brush is large and midlong with no collar.

The spike is awned, fusiform and inclined. The spike of Butte tends to be more erect than James. Spike length is typically 8 cm long and 8 mm wide and can be 9 cm long under favorable conditions.

Glumes are yellow, glabrous, midlong, and narrow. The shoulder is rounded. The beak is acuminate, narrow and 4 mm long. The keel is well-defined.

Junvenile plant growth is semierect in James whereas Butte is erect.

A waxy bloom is present on the stems and leaf sheath of James. A waxy bloom is mostly absent on the stems and absent on the leaf sheath of Butte.

The flag leaf of James is recurved and twisted. Butte has a recurved flag leaf which is not twisted.

The aunicles of James are not hairy and have no anthocyanin. Butte differs from James in that anthocyanin is present in the collar.

James is resistant to the prevalent races of stem rust (Puccinia graminis f. sp. tritici Erikss and Henn.) (Table 4).

In South Dakota tests, James has performed equal to or better than most other varieties compared with across 5 years of testing (Table 5). Agronomic data from the 1977 Uniform Regional Spring Wheat Yield Nursery are present in Table 6.

Quality data is presented in Tables 7 and 8.

Regressions of variety yield on test average across many tests are presented in Figures 1 through 5.

In production fields and field tests in 1978 and 1979, Butte has been observed to develop 'false black chaff', a genetic condition which is a blackening of the glumes and culm. False black chaff has not been observed on James when grown in tests where Butte has developed this condition. Mature head and stem segments of Butte and James sampled from the Advanced Yield Trial, Brookings, SD in 1979 are enclosed. They show the varying degrees of discoloration (dark streaks and blotches) found in Butte as opposed to an absence in James.

The brush on the seed also distinguishes James from Butte (see enclosed seed samples). James has a distinctly longer brush than that of Butte.

Table 6. 1977 Uniform Regional Spring Wheat Nursery

Variety	1977 Yield (17)*	1976-77 Yield (36)	Test Weight (18)	Headed (16)	Ripe (2)	Height (16)	Lodge[1] (10)	Leaf[2] Disease (5)
	---- bu/a -----		lb/bu	--- days -----		- cm -		
Era	51.6	46.9	60	65	91	68	1.7	2
Angus	45.8	42.2	60	63	92	69	2.0	2
Eureka	44.9	--	59	62	85	82	2.3	4
James	44.3	41.1	59	59	86	74	2.4	4
Waldron	43.6	40.2	58	61	86	80	1.9	4
Coteau	43.5	39.5	59	64	91	80	2.7	1
Chris	42.2	38.3	59	63	90	83	4.2	3
Marquis	35.7	32.7	58	64	39	87	3.8	4

* = Number of tests

[1] 1 = erect; 9 = completely lodged

[2] Leaf spotting diseases. 1 = no infection; 9 = severe infection

8000022

Table 7. Quality summary of SD 2273 and check varieties.

Variety	Total Protein %	Flour Protein %	Flour Extraction %	Mineral @65% Ex. %	Absorption %	Mixo-Gram[1]	Mix Time Min.	Dough Char.[2]	Loaf Volume cc.	Bake Evaluation[3]	General Evaluation[4]
1974 - Redfield Samples											
SD 2273	15.6	14.7	64.9	0.43	55.7**		4.0	5	199	8	1
OLAF	13.5	12.6	62.5	0.51	59.7		5.0	6	170	2	4
1975 - Redfield Samples											
SD 2273	15.3**	14.4	71.0	0.36	64.8*	3	3.0	3	995	4	1
EUREKA	18.0	17.1	60.0**	0.51	66.8	3	2.5	3	990	2	3
WALDRON	17.6	17.1	64.1	0.61	66.5	4	3.2	3	960	2	4
ERA	14.6**	14.2	65.8	0.53	61.1**	4	3.5	3	960	8	1
KITT	12.8**	12.0	68.7	0.45	60.7**	4	4.2	3	920	8	1
OLAF	17.3	16.5	62.5	0.57	64.6*	5	5.0*	5**	955	8	1
WS 1809	16.7*	15.8	64.2	0.55	63.2**	4	3.8	4*	845*	8	1
1976 - Moody County Samples - Foundation Seed											
SD 2273	17.2	16.8	71.0	0.35	71.2	6	3.0	3	925	2	4
EUREKA	17.1	16.5	67.9	0.39*	70.2	7	4.2	3*	985	4	2
ELLAR	16.1	15.2	68.1	0.36	71.7	7	3.8	3	945	2	4
ERA	13.4*	12.7	69.8	0.36	65.9**	5	3.8	4	885	8	1
1976 URSWYN - Southeastern Area Blend[5]											
SD 2273	16.3	15.5	69.9	0.38	67.0	4	3.5	4*	1075	3	4[5]
WALDRON	16.4	15.6	68.6	0.44*	69.3	6	4.5	3	975	1	4
CHRIS	16.0	15.6	68.8	0.41	65.7	4	2.8	3	1000	2	4
ERA	14.6**	14.1	68.7	0.43*	63.9*	4	3.5	3	945	4	3
BUTTE	15.4	14.5	69.2	0.35	65.1	4	3.2	3	965	2	4
COTEAU	16.4	15.7	68.5	0.43*	66.7	4	2.8	5**	1010	5	2
ANGUS	15.8	14.8	66.0*	0.41	65.3	5	4.2	3	1010	2	3

* Minor Deficiency

** Major Deficiency

1/ See Reference Mixograms

2/ 2 = very elastic; 5 = pliable, elastic

3/ 2 = satisfactory; 8 = unsatisfactory

4/ 1 = no promise; 4 = good promise

5/ Evaluation over entire spring area "Good Promise"

Table 8. 1977 Quality Summary

Variety	Total Protein	Flour Protein	Flour Extraction	Minerals @ 65% ex.	Absorption	Mixogram[1]	Mix Time	Loaf Volume	Evaluation Bake[2]	Evaluation General[3]
	percent						min.	cc		
1977 Breeder's Yield Trial - Average of 3 locations										
James	14.7	13.9	67	0.43	62	4	3.8	190	5	3
Waldron	15.2	14.5	65	0.50	63	4	3.8	203	3	4
Era	13.1	12.3	67	0.47	59	3	4.1	176	8	1
1977 Breeder's Yield Trial - Average of 2 locations										
James	15.7	14.3	66	0.46	64	4	3.0	186	6	2
Butte	15.4	14.5	65	0.44	65	4	3.0	183	5	3
Protor	15.6	14.4	62	0.50	64	6	4.6	196	7	2
WS 1809	15.6	14.8	64	0.52	64	4	3.5	185	6	2
WS 25	14.0	13.4	66	0.49	62	6	4.9	182	8	1
Eureka	16.6	15.8	62	0.52	65	6	4.1	208	4	2
Olaf	15.4	14.1	62	0.46	63	6	4.1	196	8	1
1977 Uniform Regional HRS Wheat Nursery - Average of 3 blends										
James	15.1	14.2	73	0.34	65	4	3.7	932	3	4
Waldron	15.6	14.4	70	0.41	65	4	3.2	918	2	4
Chris	15.3	14.5	72	0.39	65	4	2.8	911	2	4
Era	13.4	12.6	72	0.40	61	3	3.6	880	6	2
Angus	15.3	13.8	71	0.39	65	5	4.0	917	3	4
Coteau	16.1	15.2	72	0.41	66	4	2.9	980	3	3

1/ See reference mixograms

2/ 2 = satisfactory; 8 = unsatisfactory

3/ 1 = No promise, 4 = Good promise

8060022

10 APR 1989

In reply refer to:
PSA 89-0368

Mr. Milo Birkley

Hubbard, Nebraska 68741

Gentlemen:

We have information that on March 11, 1989, you advertised, by variety name, uncertified seed of the James variety of wheat. James is a variety protected under the Plant Variety Protection Act. The certificate of Plant Variety Protection for this variety indicates that the seed shall not be sold by variety name unless it is certified seed. Under Federal law, Title V of the Federal Seed Act, it is illegal to sell or offer for sale or advertise James by variety name unless the seed is certified.

This warning is issued under Section 412 of the Federal Seed Act which provides that in certain circumstances a suitable warning may be issued instead of other action.

In addition to complying with the Federal Seed Act, persons handling seed of any protected variety are urged to exercise care to avoid infringing rights granted under Section 111 of the Plant Variety Protection Act.

Sincerely,

Stephen J. Hurst
Seed Marketing Specialist
Seed Branch
Livestock and Seed Division

bcc: D. Svik (NE)
K. Evans (PVPO)